

Laser Diameter Measurement DDC-5 Display Controller

instruction

V 1.24

Contents

Preface

I. Check product

II. Installation and wiring

(i). Installation

(ii). Wiring

III. Set parameters and calibration

i. Panel ministries introduced

ii. Functions of the parameters

iii. The steps to set the parameters

iv. Calibration

(i). Static Correction

(ii). Dynamic Correction

IV. Maintenance and use of Notes

Product Manual

Preface

★Introduction of the product's instruction manual with the Display Controller DDC-5 can be applied to LDM series diameter measuring instrument, the combination can complete the conventional measurement of the diameter, can also output the alarm and control signal .

The performance indicators:

Measurement: Laser scanning

Laser: Visible red semiconductor laser

Laser output power: <2mW

Operating voltage: $\sim 220V \pm 15\%$ 50 - 60Hz

Operating temperature: -10~40 °C

Humidity: <85% RH

Work mode: continuous

Power consumption: <30W

I. Check product:

The box should contain the following items:

1. LDM measuring head.
2. DDC-5 display controller.
3. Communication cable(that is DDC-5 connect to the measuring head)with 5 core plugs, the standard length of 2m).
4. Two piece of the power cord.
5. Product brochures.
6. Certificate.

If the item does not, please contact the manufacturer or contact agents.

II. Installation and wiring

(I) . Installation:

DDC-5 Controller should be installed in the control cabinet, because it has

220v power on its back.

The hole Size: 90mm × 90mm

(II) . Connection: Terminals

DDC-5 wiring terminal table

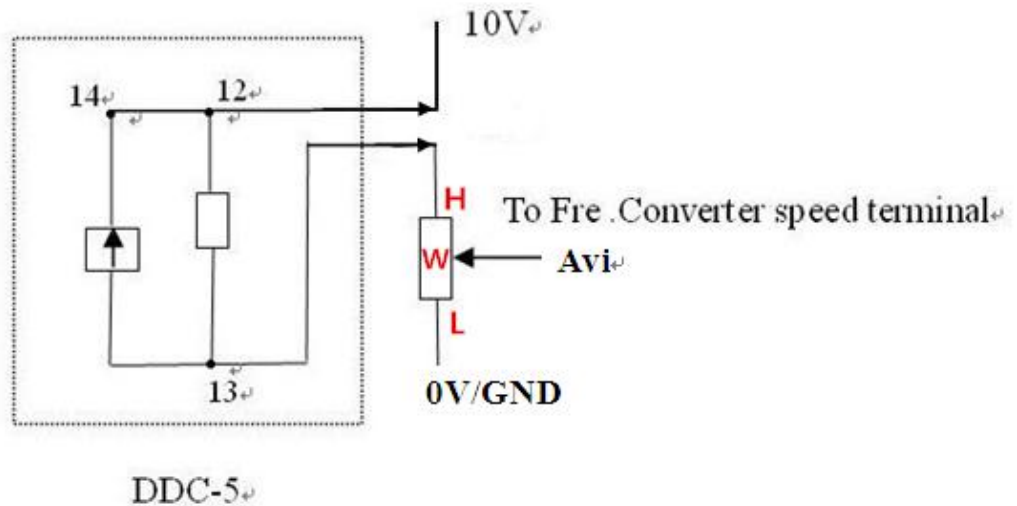
1. AC220V L	10. RS485-	19. Alarm relay No.1 NC contact
2. Empty	11. RS485+	20. Empty
3. AC220V N	12. 500 ohm Resistance loaded	21. Extended RS485 +
4. Grounding protection	13. AGND	22. Alarm relay No.2 NO contacts
5. Empty	14.±10mA current output feedback	23. Alarm relay No.2 Middle contact
6. Empty	15. AGND	24. Alarm relay No.2 NC contact
7. DC24V output +	16.±5V output voltage feedback	25. Empty
8. DC24V output -	17. Alarm relay No.1 NO contacts	26. Extended RS485 -
9. DGND	18. Alarm relay No.1 Middle contact	

i. the cable with screw plug connect to communications socket of measuring unit, the other side of cable to the display unit DDC-5, the **Brown cable** on the 11th terminal, the **Blue cable** on the 10th terminal;

ii. the measuring unit and display unit DDC-5 will be connected to the power cord;

(III) There are two ways the feedback control wiring

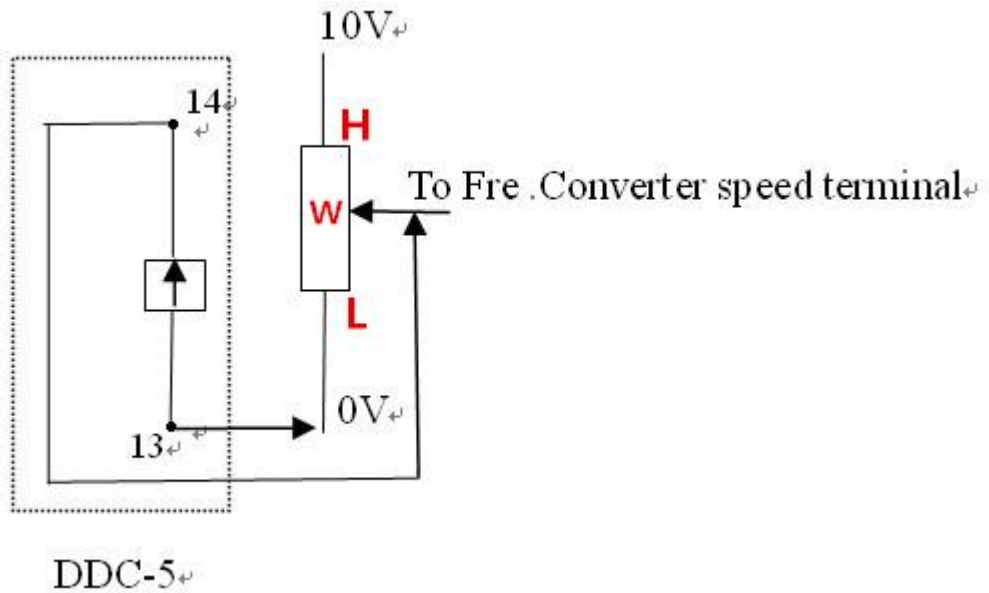
i. Voltage feedback using series connection



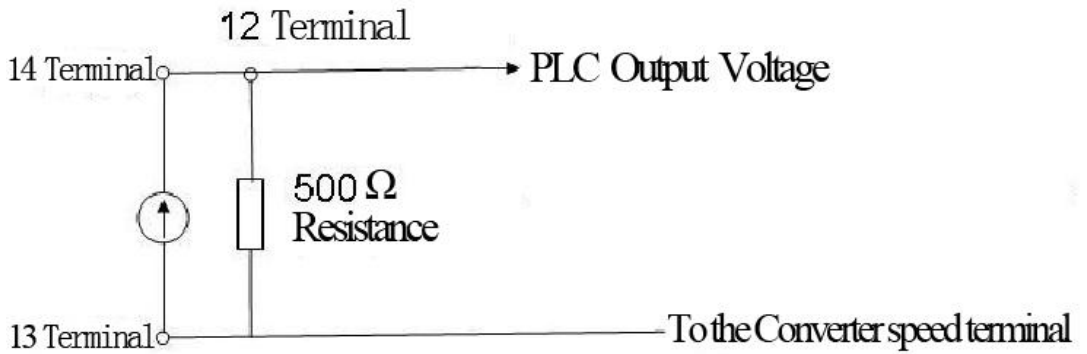
Voltage feedback output method: short the 14th and 12th terminals, then connect the 14th terminal to the power supply 10V of the external speed regulator potentiometer of the frequency converter, terminal 13 is connected to the H terminal of the variable speed potentiometer (see wiring diagram). This is equivalent to connecting the DDC-5 to the power supply of the potentiometer as series connection method.

ii. Current Feedback using Parallel connection

Terminal 14 is connected to the W terminal of the speed controller terminal (see wiring diagram), and terminal 13 is connected to the L terminal of the speed regulator potentiometer of the frequency converter. This is equivalent to connecting the DDC-5 to the speed regulator of the potentiometer.

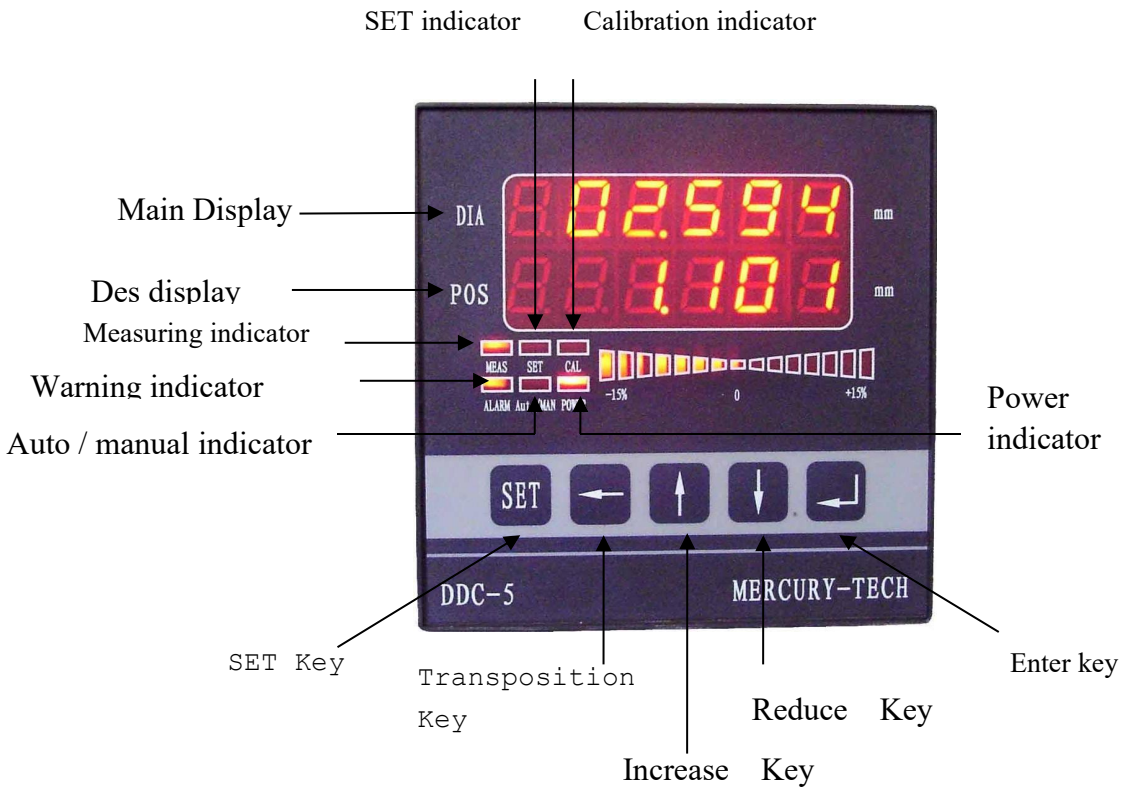


iii. Voltage Feedback for PLC



III. To set the parameters and correction

(I). Panel ministries introduced



Name	Function
Main Display	And measurements show that the parameters set.
Des display	show the position of the EUT. (0.000 is the middle of the laser beam)
Power indicator	Direct access to the normal power supply
Measuring indicator	Instructions are measuring
Lighter of calibration	Instructions are calibrating
Warning indicator light	Direct measurements of more than setting minimum or maximum
Automatic / manual indicator light	Bright for the automatic, dark for the manual ,use transposition key to set
SET	To ENTER or EXIT parameters setting
Transposition Key	Dual function: in the parameters setting. to move the flashing position; in the measurements, push this key ,it can output control voltage. Auto indicator light
Increase in the key	In the parameters setting, the flashing digit plus 1;
Reduce the key	In the parameters setting ,the flashing digit cut 1;
Enter key	Dual function: to choose parameters of the state, into the revised parameters; in the revised parameters, and save the end of the revised parameters

(II). introduced the feature parameters

Push ‘set’ key, you can set the following parameters, push ‘enter’ to memory, push ‘set’ key to exit.

Cd01: Setting X axis value, unit: mm

Cd02: Upper Tolerance: mm

Cd03: Down Tolerance: mm

Cd04: Setting Y axis value, unit: mm

Cd05: Upper Tolerance: mm

Cd06: Down Tolerance: mm

Cd07: Alarm model (normal 15)

Tens digit is to select the output relay

0 - relay not output;

‘1’ the ultra-upper tolerance alarm.

ultra-down tolerance alarm.

Relay No.1 work.

‘2’ the ultra-upper tolerance alarm.

ultra- down tolerance alarm.

Relay No.1 and No.2 work simultaneously.

‘3’ the ultra-upper tolerance alarm relay No.1 work.

ultra-down tolerance alarm relay No.2 work

‘4’ the ultra-upper tolerance alarm relay No.2 work.

ultra-down tolerance alarm relay No.1 work.

Unit digit is Alarm Model.

0- Not Alarm.

‘1’ the ultra-upper tolerance alarm.

‘2’ ultra-down tolerance alarm.

‘3’ the ultra-upper and ultra-down tolerance alarm.

‘4’ Ultra-down tolerance alarm .When display is ‘0’, do not alarm.

‘5’ The ultra-upper and ultra-down tolerance alarm .When display is ‘0’, do not alarm.

Cd08: Alarm time, from 0 to 9.9 seconds (normal 1.0)

Cd09: Display and control output model, two digits. (normal 01)

Tens digit is Select the display

“0” single dimensional laser diameter gauge, the upper display the diameter, the lower is the cable position.

Or **Two-dimensional laser diameter gauge, when it measure flat cable.**

“1” single dimensional laser diameter gauge, the upper display the diameter, the lower is the tolerance(That is the difference between the measured value and the setting value).

“2” Two-dimensional laser diameter gauge, the upper display the X-axis diameter, the lower diaplay the Y-axis diameter.

“3” Two-dimensional laser diameter gauge, the upper display the average diameter of the XY axis, the lower diaplay the Ellipticity (That is the Absolute value of XY-axis diameter difference).

“4” Two-dimensional laser diameter gauge, the upper display the average diameter of the XY axis, the lower diaplay the error (That is the difference between Average diameter value and Setting value).

Unit digit is Select output

0 - no output

1 - PID adjustment, Positive error Positive output; **for capstan**

2 - PID adjustment, Positive error Negative output; **for extruder**

3 - Proportional output, Output voltage and Reference deviation is Direct proportion.

Cd10: Value ratio (each mm corresponding to the percentage of output regulation XXX.X%) 0 ~ 999.9%(normal 10)

Cd11: P= 0 ~ 999.9% (normal 0)

Cd12: I= 0 ~ 999.9%(normal 10)

Cd13: D= 0 ~ 999.9% (normal 0)

Cd14: Communication format (normal 1000)

Thousands digit: receive data format 0 = BCD code 1=ASK code

LDM25,LDM50,LDM25XY,LDM50XY

Hundred digit: receive baud rate 0 = 2400,1 = 4800,2 = 9600,3 = 19200,4= 38400.

Tens digit: to send data format, 0 = BCD format code; 1 = LED screen for the agreement of the BCD Format

Unit digit: send baud rate; 2400,1 = 0 = 4800,2 = 9600,3 = 19200

Cd15: password to enter the calibration

Input **277802** to enter the static correction of X axis.

Input **277803** to enter the dynamic correction of X axis.(No Need)

Input **277804** to enter the static correction of Y axis.

Input **277805** to enter the dynamic correction of Y axis.(No Need)

Cd16: Input Standard value for the the static correction of X axis

Cd17: Input Standard value for the the dynamic correction of X axis.(No Need)

Cd18: Input Standard value for the the static correction of Y axis

Cd19: Input Standard value for the the dynamic correction of Y axis.(No Need)

Before Calibration, You must put a standard bar on the measuring unit.

IV. RS-485 communication

Serial port settings: Baud rate 2400 ~ 19200bps, 8 data bits, 1 stop bit, even check.

Automatically upload data, 9 bytes per frame

; B0 ----- A7H, The starting point of the frame

; B1 ----- P65, the off-center position of object in the scanning beam and ten digit (BCD code)

Higher than the center is 0. Lower than the center is 8.

- ; B2 ---- P43, Unit digit and tenth (BCD code)**
- ; B3 ---- P21, hundredth and thousandth (BCD code)**
- ; B4 ---- D65, hundreds digit and tens digit of diameter (BCD code)**
- ; B5 ---- D43, unit digit and tenth of diameter (BCD code)**
- ; B6 ---- D21, hundredth and thousandth of diameter (BCD code)**
- ; B7 ---- parity bit = Mantissa that is the sum of the BCD code from B1 to B6**
- ; B8 ---- A8H, the end of the frame**

Example 1,

B0 B1 B2 B3 B4 B5 B6 B7 B8

A7 00 10 20 00 31 04 64 A8

Center = 1.020mm Measuring diameter = 3.004mm

B7 = B1 + B2 + B3 + B4 + B5 + B6 = 00 + 10 + 20 + 00 + 30 + 04 = 64

Example 2,

A7 80 10 20 00 31 04 44 A8

Center = -1.020mm Measuring diameter = 3.004mm

B7 = B1 + B2 + B3 + B4 + B5 + B6 = 80 + 10 + 20 + 00 + 30 + 04 = 144

V. The maintenance and notes

- i. The glass window of measuring head should be maintain clean, When it dirty, you can wipe with the camera paper or a soft cloth with alcohol.
- ii. Various parameters of the instrument affect the normal use, can not be tamper with.

Note: In order to ensure personal safety, equipment must be reliable grounding!